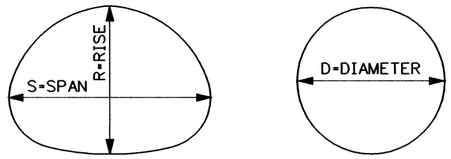
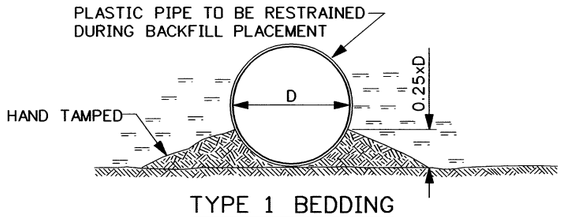
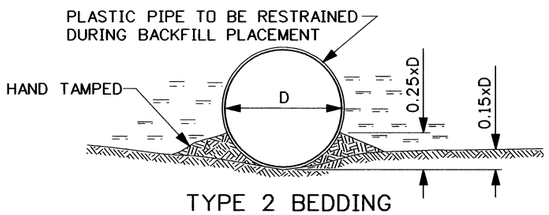
| STRUCTURE EXCAVATION & COMPACTING BACKFILL QUANTITIES |
|---|
| **STRUCTURE EXCAVATION:** |
| PAY QUANTITIES WILL BE BASED ON THE ACTUAL VOLUME REMOVED WITHIN THE LIMITS OF "E" & "G" & THE LENGTH OF THE EXCAVATION. |
| **COMPACTING BACKFILL:** |
| PAY QUANTITIES WILL BE BASED ON THE STRUCTURE EXCAVATION PLUS THE VOLUME COMPUTED FROM "F" & "H", LESS THE VOLUME OF THE PIPE. |
| **PIPE VOLUME:** |
| THE VOLUME OF THE PIPE WILL BE BASED ON THE INSIDEDIMENSIONS OF THE PIPE REGARDLESS OF THE KIND OFPIPE USED (SEE SECTION 210 - STRUCTURE EXCAVATION &COMPACTING BACKFILL, FROM THE ITD STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION). |



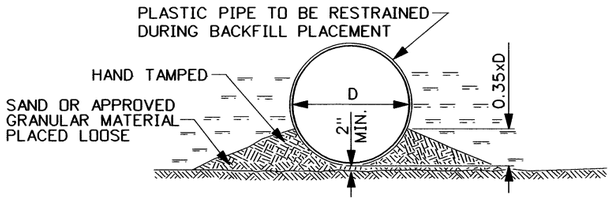

DIMENSION DETAIL



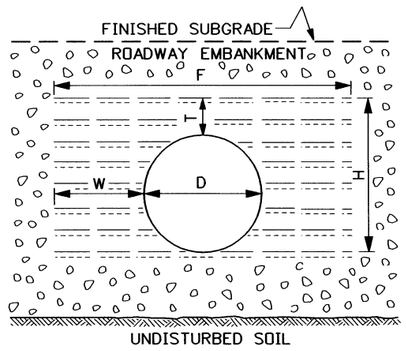

TYPE 1 BEDDING



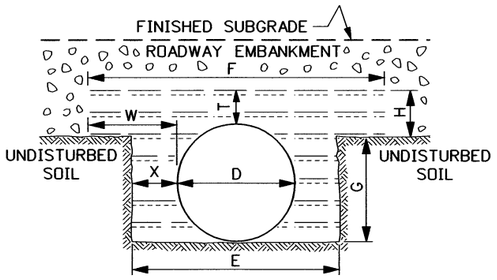

TYPE 2 BEDDING



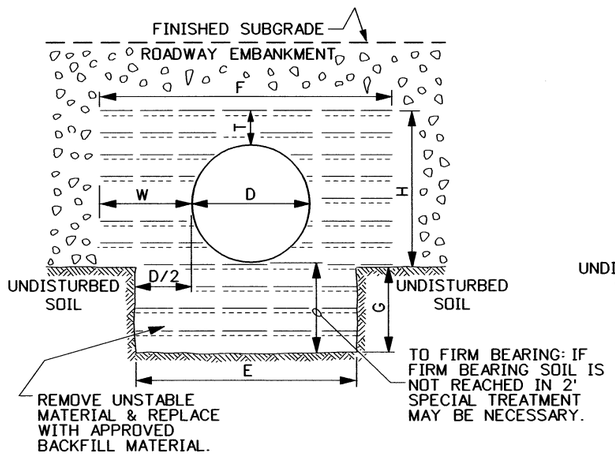

TYPE 3 BEDDING



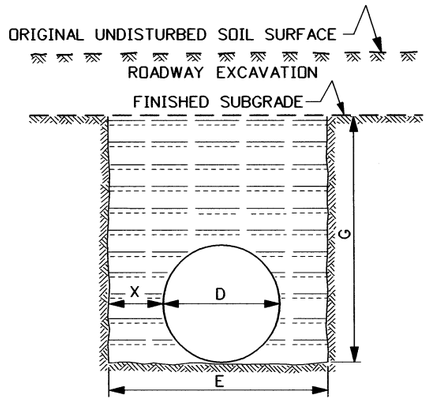

ABOVE UNDISTURBED SOIL



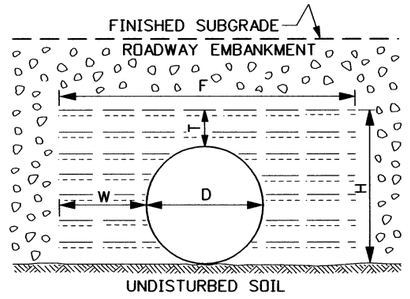

ABOVE & BELOW UNDISTURBED SOIL



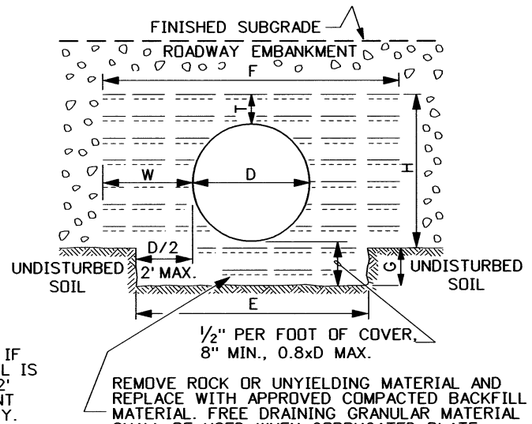

UNSTABLE MATERIAL




BELOW UNDISTURBED SOIL




ON UNDISTURBED SOIL




UNYIELDING MATERIAL

| CONDUIT INSTALLATION NOMENCLATURE | |
|---|---|
| ROUND PIPE | |
| SYMBOL | DESCRIPTION |
| D | INSIDE DIAMETER OF PIPE. |
| D/2 | ONE-HALF INSIDE DIAMETER OF PIPE. |
| E | WIDTH OF COMPACTING BACKFILL IN UNDISTURBED SOIL |
| F | WIDTH OF COMPACTING BACKFILL IN FILL EMBANKMENT |
| G | HEIGHT OF COMPACTING BACKFILL IN UNDISTURBED SOIL |
| H | HEIGHT OF COMPACTING BACKFILL IN FILL EMBANKMENT |
| T | 1' FOR CORRUGATED METAL PIPE, CONCRETE PIPE, & PLASTIC PIPE. 2'-0" FOR CORRUGATED PLATE PIPE (NOTE: T DETERMINES THE LIMITS OF H). |
| W | INSIDE DIAMETER OF PIPE BUT NOT OVER 4'-0". |
| X | EQUAL TO 2'-0" MAX. WHEN D LESS THAN AND EQUAL TO 4'-0", OR EQUAL TO D/2 MAX. WHEN D GREATER THAN 4'-0", OR AS SPECIFIED. |
| * ARCH PIPE | |
| S | SPAN (HORIZ. INSIDE WIDTH OF PIPE) |
| R | RISE (VERT. INSIDE WIDTH OF PIPE) |
| S & S/2 | S EQUAL TO D, BUT SHALL READ SPAN & D/2 SHALL READ SPAN/2 |
| X | EQUAL TO 2'-0" MAX. WHEN SPAN LESS THAN AND EQUAL TO 4'-0", OR EQUAL TO SPAN/2 MAX. WHEN SPAN GREATER THAN 4'-0", OR AS SPECIFIED. |

* SEE NOTE NO. 8 & DIMENSION DETAIL

## NOTES

1. NORMALLY, PIPE SHALL BE CAMBERED FROM A CHORD THROUGHTHE INLET AND OUTLET INVERTS AN ORDINATE AMOUNT EQUALTO 1% OF THE PIPE LENGTH. CAMBER SHALL BE DEVELOPED ON PARABOLIC CURVE.
2. IF THE ELEVATION OF ANY POINT ON THE PARABOLIC CURVE, AS DESIGNED, IS MORE THAN 6" HIGHER THAN THE ELEVATION OF THE INLET INVERT, THE CAMBER MUST BE REDUCED OR THE PIPE GRADE INCREASED.
3. THE GRADE BETWEEN THE INLET AND OUTLET INVERTS SHALL NOT BE FLATTER THAN 1% EXCEPT IN CASES WHERE THE NATURAL DRAINAGE GRADE IS LESS THAN 1%.
4. METAL PIPE MAY BE ROUND UNLESS ELONGATION (5%) IS REQUIRED ON THE PIPE SUMMARY SHEET. STRUCTURAL PLATE PIPE SHALL BE FABRICATED 5% OUT OF ROUND.
5. TYPE 1 BEDDING SHALL BE USED FOR ROUND PIPE EXCEPT WHEN TYPE 2 OR 3 BEDDING IS REQUIRED ON THE PIPE SUMMARY SHEET.
6. NORMALLY, THE MINIMUM DISTANCE BETWEEN MULTIPLE PIPES IS D/2 OR S/2, BUT NOT LESS THAN 1' BETWEEN THE PIPES OUTER WALLS (NOTE: MIN. BETWEEN PIPES MAY NEED TO BE GREATER FOR MECHANICAL TAMPING).
7. THE BED FOR ARCH TYPE PIPE SHALL BE SHAPED TO FIT THE BOTTOM OF THE PIPE.
8. DIMENSIONS FOR ARCH PIPE SHALL BE THE SAME AS FOR ROUND PIPE, EXCEPT AS NOTED IN THE "CONDUIT INSTALLATION NOMENCLATURE" TABLE.
9. NOT TO SCALE.

REVISIONS

| NO. | DATE | BY | NO. | DATE | BY | NO. | DATE | BY |
|---|---|---|---|---|---|---|---|---|
| 1 | 12-68 | | 6 | 11-83 | | 11 | 12-04 | MSM |
| 2 | 3-69 | | 7 | 7-89 | GB | | | |
| 3 | 9-70 | | 8 | 6-92 | MSM | | | |
| 4 | 2-72 | | 9 | 2-00 | MSM | | | |
| 5 | 11-78 | | 10 | 11-01 | MSM | | | |

SCALES SHOWN ARE FOR 11" X 17" PRINTS ONLY

CADD FILE NAME d12_1204.std

DRWG. ORIG. DATE: JULY, 1968

**IDAHO TRANSPORTATION DEPARTMENT**

BOISE IDAHO

ASSISTANT CHIEF ENGINEER (DEVELOPMENT)

CHIEF ENGINEER

STANDARD DRAWING

# CONDUIT INSTALLATION FOR NEW ROADWAYS & APPROACHES

English

STANDARD DRWG. NO. D-12

SHEET 1 OF 1

PROFESSIONAL ENGINEER REGISTERED Milford L. Miller 2240 12/29/04 STATE OF IDAHO MILFORD L. MILLER